ABSTRACT

THE DEGRADATION OF Lactobacillus acidophillus'S *EXTRACELLULER POLYMERIC SUBSTANCE (*EPS) USING 405 NM DIODE LASER AND CHLOROPHYLL

Background: Lactobacillus acidophilus (L. acidophilus) is an facultatif anaerob gram positive bacteria that has been frequently found in dental caries. L. Acidophilus has ability to form biofilm so it is difficult to be eliminated. Biofilm structure is composed by primary of extracelluler polymeric substance (EPS). Photodynamic theraphy is an alternative to eliminate bacterial biofilm. **Purpose**: This study is aimed to determine the degradation of L. acidophilus's EPS using photodynamic theraphy with 405 nm diode laser and exogenous photosensitizer chlorophyll. **Method**: This study used L. acidophilus, diode laser 405 nm as a light source and chlorophyll as exogenous photosensitizer. Five Different groups were analyzed: control group, chlorophyll group, chlorophyll + laser 90" , Cholorophyll + laser 105", and Chlorophyll + 120". The EPS was determined by using Confocal Laser Scanning Microscope (CLSM). **Result**: Groups with laser and chlorophyll showed significant EPS degradation compared to control group and chlorophyll group ($p<0.05$). Different irradiation time resulted in non significant EPS degradation compared to each other ($p>0.05$). **Conclusion**: Photodynamic theraphy with diode laser 405 nm and chlorophyll could degrade L. acidophylus's EPS. 90" irradiation time was the optimal time to degrade L. acidophylus's EPS.

Keywords : Photodynamic, diode laser, chlorophyll, L. acidophylus, EPS